

## Claims

1. An optical communications link having at least one optical fiber, in particular for transmitting information, characterized in that the optical fiber is bent repeatedly, fiber sections having right-hand and left-hand curvature being distributed in such a way over the communications link that the average torsion of the fiber over the communications link is approximately zero.
2. The optical communications link as recited in Claim 1, characterized in that the optical fiber is bent in such a way that the torsion of the subsection averaged over subsections of the communications link is approximately zero.
3. The optical communications link as recited in Claim 1 or 2, characterized in that the optical fiber is wound in a helical shape, alternating with a right-hand and left-hand helix.
4. The optical communications link as recited in Claim 3, characterized in that one or a plurality of right-hand windings follow one or a plurality of left-hand windings and alternate with one another, the length of the fiber segment having the right-hand helical winding corresponding to the length of the fiber segment having the left-hand helical winding.
5. The optical communications link as recited in one of Claims 1 through 4, characterized in that the optical fiber is joined to an elastic carrier material, which, in response to mechanical loading, permits a change in the form of the transmission line and, in response to the lack of a mechanical load, retains the optical fiber in

its initial curved form.

6. The optical communications link as recited in one of Claims 1 through 5, characterized in that the optical fiber is wound around at least one elongated carrier element, preferably a cylinder.

7. The optical communications link as recited in Claim 6, characterized in that the carrier element is flexible.

8. The optical communications link as recited in one of the Claims 6 or 7, characterized in that the fiber is secured to the carrier element in such a way that it is movable in its wound form, but remains stabilized on the carrier element.

9. The optical communications link as recited in Claim 8, characterized in that the fiber is flush mounted on the carrier element or embedded between the carrier element and a cladding material.

10. The optical communications link as recited in one of Claims 6 through 9, characterized in that the optical fiber is coiled with alternating winding direction around an even number of, preferably two, side-by-side carrier elements.

11. The optical communications link as recited in one of Claims 6 through 10, characterized in that one or a plurality of left-hand windings around one of the carrier elements is equivalent to the number of right-hand windings around another carrier element.

12. The optical communications link as recited in one of the preceding claims, characterized in that it has at

least two helically wound optical fibers having different winding directions to direct the light in the forward and return directions

2025-03-20 10:40:00

14. The optical communications link as recited in one of the preceding claims, characterized in that the winding radius of the optical fibers is greater than 2 cm, preferably greater than 3 cm.

add a  $\triangleright$

[illegible]